

Notice of Allowability

Application No.

10/659,898

Examiner

Jennifer M. Dolan

Applicant(s)

KUZMA, ANDREW J.

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to AF Amdt 4/7/06 + Interview of 5/3/06.
2. ☒ The allowed claim(s) is/are 1-3, 5-8 and 27-29.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

DETAILED ACTION

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Todd Becker on 3 May 2006.

The application has been amended as follows:

The After Final Amendment filed on 4/7/06 has been entered.

In line 6 of claim 1 (from the 4/7/06 Amendment), --formed on the wafer and-- has been inserted between "test structure" and "comprising"

Claims 19-22 have been canceled.

Allowable Subject Matter

2. Claims 1-3, 5-8, and 27-29 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance is the combination of a test structure formed on the wafer, the test structure being coupled to the front or back facet of a device to redirect the light

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beam emitted from the front or back facet, and the test structure being removable, in addition to the other limitations in the claims.

Each reference of the prior art of record is deficient in at least one of the recited limitations above, with no viable or reasonable way to modify the reference in order to meet the claimed limitations.

The closest prior art of record is US 6,668,000 to Choa, which teaches a test structure incorporated on a light emitting device wafer, where the test structure is considered removable (i.e., capable of being removed). In Choa, however, the test structure is disposed internal to the device, such that a small fraction of the light is diverted for testing, and such that the beams emitted from the front and back facets are not redirected. While it is considered possible to remove the test structure in Choa, its position internal to the laser cavity does not generally facilitate easy removal of the test structure, and it is clear that removal of the test structure in Choa is not intended. Furthermore, the light redirected by the test structure in Choa comprises only a small fraction of the light that is emitted through the facet. The claimed invention, however, differs critically from Choa in that a test structure positioned external to the laser cavity and coupled to one of the facets enables easy removal through cleaving, and additionally, redirects a much greater portion of the emitted light for testing.

Other prior art references teach forming a redirecting structure having a substantially similar configuration as the test structure coupled to the front facet of a laser diode, with both the laser and the redirecting structure provided on the same substrate (see US 6,459,716 to Lo et al.). In this case, the redirecting structure is used to convert an edge-emitting device into a surface-emitting device, and hence, cannot in any reasonable way be construed as being a "removable"

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structure, since the removal of the redirecting structure would destroy the intended function of the device.

Yet another set of similar prior art references teach discrete light-emitting devices having a front facet coupled to a re-directing structure provided on a separate submount (see US 6,487,224 to Ohashi et al. or US 6,449,296 to Hamasaki et al.). Hence, these references fail to teach forming the light emitting structure and the test structure on the same wafer. Since the provision of a test/redirecting structure on the wafer allows for testing and analysis of the light emitting device before singulation from the wafer, and since the methods required for integrating a redirecting test structure with the light emitting device on the same wafer are not trivial, it is the Examiner's opinion that it would not be reasonable to incorporate features located on the submount or package substrate directly into the device wafer.

Since all of the differences between the prior art of record and the claimed invention produce critical and significant effects, since there is no reasonable motivation to modify the prior art in order to obtain the claimed invention, it is the Examiner's opinion that the invention as claimed would not have been obvious to a person having ordinary skill in the art.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Dolan
Examiner
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